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Verbal dominance vs. temperamental and anxiety variables of FL university students

Abstract: The study presented in this article examines the relationship between levels of quantitative verbal dominance of FL university students and individual (personality) differences. Measures of students' verbal dominance levels included Talkativeness, Initiation Frequency, and Mean Chunk Length, and were estimated on the basis of observations of conversation classes, specifically whole-group interaction based on speaker self-nomination. Individual differences, assessed by means of personality inventories, included temperamental characteristics (properties of the central nervous system, Extraversion and Neuroticism) and anxiety (trait and state). The observation scheme used in the study has been presented, as have been the results of a correlation analysis of the variables. The results revealed the existence of a relationship between the observed verbal dominance group structures and the individual differences examined. Talkativeness correlated with strength of excitation, balance of nervous processes, Extraversion, and Trait-anxiety; Initiation Frequency correlated with strength of excitation, balance of nervous processes, Neuroticism, Extraversion, Trait-anxiety, and State-anxiety; and Mean Chunk Length bore correlation with Extraversion.

Keywords: verbal dominance, individual differences, temperamental variables, anxiety, speech quantity, talkativeness

1. Introduction

A group of people is likely to develop a hierarchical relation among its members, where one group member becomes more dominant than others. Dominance has been operationalized as a variable in psychological research in a variety of ways, for example, as a personality measure, according to physical assertiveness, by the initiation of contacts, in giving commands, by ratings of dominant-submissive, or by ratings of attractiveness, athletic ability, and fashionability (Ellyson & Dovidio, 1985, pp. 8–9). Differences in dominance have been found

to be related to differences in the amount of talk (Schmid Mast, 2002a, see also further below).

The present study examines the relationship between levels of quantitative verbal dominance of FL university students and individual (personality) differences. Measures of students' verbal dominance levels included Talkativeness, Initiation Frequency, and Mean Chunk Length, and were estimated on the basis of observations of conversation classes, specifically whole-group interaction based on speaker self-nomination. Individual differences, assessed by means of personality inventories, included temperamental characteristics (properties of the central nervous system, Extraversion and Neuroticism) and anxiety (trait and state). The observation scheme used in the study is presented, as are the results of a correlation analysis of the variables. The results reveal the existence of a relationship between the observed verbal dominance group structures and the individual differences examined.

2. Dominance

One of the basic notions describing social behavior and organization among both humans and animals is that of dominance. Dominance has often been related to the concepts of power and status, and one possible way to define the three terms is to say that *power* refers to "the ability to influence others to do what one wants," *dominance* "involves some component manifestation of power," and *status* denotes "the position assigned or accorded [to] a person in a hierarchy by other members of that social organization" (Harper, 1985, p. 33). Social psychologists distinguish between dominance regarded as a *trait*, a personality characteristic, a desire, and tendency to influence or control other people; and *state*, a group characteristic, one's position within a group hierarchy, reflecting relationship patterns among the group members (Ellyson & Dovidio, 1985, p. 7; Rienks & Heylen, 2006, p. 77; Schmid Mast, 2002a, p. 421). Whenever one member of a dyad is more dominant than the other, or—in a group larger than a dyad—whenever group members differ with regard to their relative dominance levels, we are dealing with a hierarchical relation, or a dominance hierarchy. Male and female dominance hierarchies in same-sex interaction have been found to exhibit certain differences with respect to dominance patterns and temporal stability (Schmid Mast, 2002b).

Studies on dominance deal with both verbal and non-verbal behavior. Non-verbal behavior involves paralanguage (e.g., pitch, loudness, speech disturbances), eye and visual behavior, facial expressions (e.g., smiling, frowning), kinesics (e.g., nodding, hand gestures, postural shifts), proxemics (the use of

space), and haptics (touch) (Dunbar & Burgoon, 2005; Ellyson & Dovidio, 1985). Specific non-verbal behaviors often associated with dominance include body relaxation, open-body posture, erect posture, raised chin, hand gestures and expanded range of movement, higher ratio of looking while speaking to looking while listening ('visual dominance pattern'), high vocal control, occupying more space, body elevation, and sitting at the head of the table (Cashdan, 1998; Dunbar & Burgoon, 2005; Ellyson & Dovidio, 1985; Harper, 1985; Kalma, 1991; Leffler et al., 1982; Schwartz et al., 1982).

There is evidence showing a strong relationship between dominance and speaking time (Hayes & Meltzer, 1972; Kalma, 1991; Mullen et al., 1989; Schmid Mast, 2001), and in fact, speaking time has been found to be "one of the best-established behavioral measures of dominance in the literature" (Schmid Mast & Hall, 2003, p. 874, see also Schmid Mast, 2002a). Although a number of researchers (e.g., Aran & Gatica-Perez, 2010; 2011; Dunbar & Burgoon, 2005; Harper, 1985; Kalma, 1991) consider amount of talk to be a *nonverbal* property of speech, the present study is based on the assumption that amount of talk is a *quantitative* characteristic of *verbal* interaction, and as such it is regarded here as an indicator of *verbal dominance*. Especially in the FL learning context, the amount of verbal output is not something to be taken for granted. The process of FL acquisition comes down to learning how to communicate via L2/L3/etc. verbal channel, which is directly related to the amount and kind of verbal output learners are able to provide.

2.1 Verbal dominance

Two relevant concepts relating dominance to language come from Linell (1990; Linell et al., 1988) and Itakura (2001; Itakura & Tsui, 2004). Analyzing dominance in spoken interaction, Linell (1990, p. 158) notes that dominance concerns getting the most of what is available to participants in the interactional territory, "the floor." Recognizing a multidimensional nature of dominance in interaction, he distinguishes four dimensions: purely quantitative dominance, semantic/topic dominance, interactional dominance, and strategic moves. **Quantitative dominance** refers to the amount of talk; **semantic/topic dominance** is related to introducing and maintaining topics and perspectives on topic; **interactional dominance** is based on initiative-response analysis and examines patterns of asymmetry; **strategic moves** can be observed when a person does not necessarily speak much or make numerous strong moves, but says a few things which are very important strategically.

Conversational dominance, analyzed in terms of interactional structure, is understood as "one speaker's tendency to control the other speaker's conversational actions over the course of interaction" (Itakura, 2001, p. 1862), and is said

to be three-dimensional: **sequential dominance** is connected with a speaker's control of the direction of conversation, **participatory dominance** is related to restricting an interlocutor's speaking rights, specifically through interruption, overlap, and completion offers, and **quantitative dominance** reflects participants' contributions to interaction expressed by the number of words spoken or by average turn length (Itakura, 2001; Itakura & Tsui, 2004).

It seems reasonable to relate verbal dominance not only to spoken, but to written language as well, so that it would also include computer-mediated communication (CMC), for instance. Zhou et al. (2004) use the term *language dominance* in their study on deception in CMC for what is called *verbal dominance* here, while *language dominance* has often been used in the context of bilingualism to "refer to either one's current preference for a language, or the skill or amount of practice one has in a language" (Chernobilsky, 2008). Keeping the two concepts separate might help avoid confusion in research terminology.

2.2 Measures of speech quantity and their relation to verbal dominance

To account for quantitative aspects of speech, different and not always comparable units of measurement have been suggested, some of which, including those initiating this kind of research, are as follows: a *participation* (Bonito & Hollingshead, 2012; Chan & McCroskey, 1987; Stephan & Mishler, 1952), a *turn* (Sacks et al., 1974; Seliger, 1977), an *act* (Bales et al., 1951), a *move* (Long, Adams, McLean, & Castaños in: Long & Porter, 1985, p. 215), *length of time* one speaks (Chapple & Arensberg, 1940), *word count* (total number of words), *speech duration* (total length of discrete utterances excluding pauses of 3 or more seconds), *speech rate* (word count divided by duration of talking time, expressed in words per second) (Wardle et al., 2011), *number of words per turn*, *duration per turn*, and *number of floorgrabs* (Rienks et al., 2006).

The relationship between different measures of speech quantity is not very clear, as illustrated by the following examples. As a quantitative measure of ESL students' classroom participation, Seliger (1977) adopted the number of turns, where a turn might vary from a single word to an elaborate utterance. It seems obvious that two identical numbers of turns might prove to be dramatically different measures of talkativeness when expressed in the number of words or speaking time. Nevertheless, studying participation rates of an 18-member group, Tsai (McGrath, 1984, p. 164) found high correlations between three different units of measurement: Bales's IPA unit, number of sentences, and number of floor turns (disregarding speech length). Again, IPA units might vary considerably in length, as measured by the number of words, and so could sentences. Ultimately, speech quantity is expressed as numbers of units which are more

equal, less equal, or extremely unequal, for example, seconds or minutes; words, as opposed to syllables; and turns, respectively.

Studies that aim at defining the best indicators of dominance include quantity measures in different configurations. Here are a few examples: Hung et al. (2007) used a sophisticated method of automatic estimation of the most dominant member of a group meeting, and found that among the features extracted from audio and video materials, the highest classification accuracy was provided by total speaking length (85%) and total speaking energy (82%).

In a study on automatic detection of dominance and influence levels in meetings, Rienks et al. (2006) found that depending on the statistical model applied, *turn duration* is best in one model (a *turn* is defined as a complete utterance, containing at least one word, without silences longer than 1.5 s), while *number of turns* and *topic initialization* work best in another.

Rienks and Heylen (2006) found the following five features to have the strongest discriminatory power in comparing speaker dominance in meetings, listed in order of importance: the number of *floorgrabs* (a *floorgrab* is defined as each time a person starts to speak following a silence longer than 1.5 s), the *number of turns* taken in a meeting, the *number of successful interruptions*, the *total number of words* uttered in the meeting, and the *number of questions asked*. They describe a procedure which provides a 75% success rate in identifying the person who dominates a meeting, using only the first two of the above features.

The relationship between dominance and speaking time is more visible in *non-competitive* settings and changes with group size—the larger the group, the stronger the relationship (Schmid Mast, 2002a, p. 444). One's quantitative dominance level can be mediated by perceived competence in a particular situation and topic familiarity (Schmid Mast & Hall, 2003, p. 874).

Studies on dominance which recognize its quantitative aspect have gone beyond social psychology and discourse analysis, to attract researchers from various fields and interest areas such as communications engineering (Zablotskaya et al., 2012), computer-mediated communication (Zhou et al., 2004), automatic dominance modeling (Jayagopi et al., 2009), and automatic recognition of personality in conversation (Mairesse, 2006).

3. Individual difference variables

The present study examines how FL students' verbal dominance levels are related to individual differences, which include temperamental characteristics and anxiety (both trait and state anxiety). The description of people according to different temperament types has a long history and goes back to Hippocrates

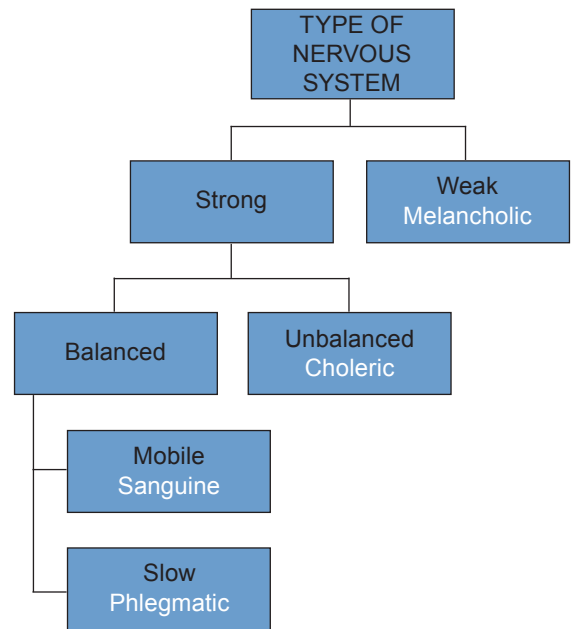


Figure 1. Pavlov’s Types of Nervous System and the Hippocrates-Galen temperaments (Based on Ruch 1992, p. 1261, from Strelau)

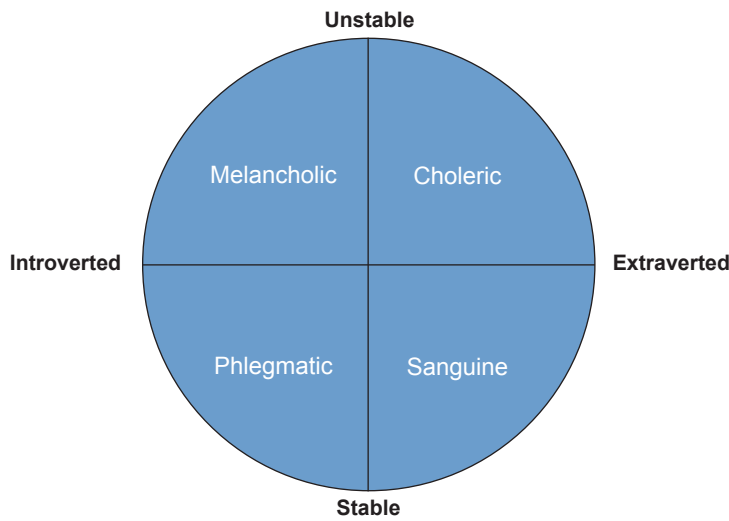


Figure 2. The relationship between Eysenck’s Extraversion-Introversion and Neuroticism-Stability dimensions and the Hippocrates-Galen four temperaments (Based on Eysenck & Eysenck, 1964, p. 13)

(460–370 BC) and Galen (AD 129–c. 200), and their hypothesis of melancholic, choleric, sanguine, and phlegmatic temperaments. Pavlov and Eysenck refer to

the Hippocrates-Galen typology using combinations of different dimensions. For Pavlov, temperament types correspond to types of the nervous system, and the nervous system type is determined by a combination of its three properties: strength, mobility, and balance between two nervous processes: excitation and inhibition. For Eysenck, the four temperaments parallel different configurations of Extraversion and Neuroticism (Ruch, 1992). The relationship of the early temperament types to Pavlov's and Eysenck's concepts are presented in Figures 1 and 2.

3.1 Strelau's temperament dimensions

Strelau's concept of temperament as described by Strelau et al. (1990a) is derived from Pavlov's premise that temperament is represented by the type of the central nervous system (CNS), which is determined by the following properties: *strength of excitation* (the most important property), *strength of inhibition*, the *balance* (or equilibrium) of nervous processes (i.e., between strength of excitation and strength of inhibition), and *mobility* of nervous processes. **Strength of excitation** is described as the functional capacity of the nervous system exhibited in withstanding very strong or long stimulation without passing into protective inhibition. People with a strong CNS, despite highly stimulating and stressful situations, are able to continue an activity, do not become emotionally disturbed, and maintain their efficiency level. **Strength of inhibition** enables one to withstand long-lasting conditioned inhibition, and is manifested by the ability to delay or interrupt an action or restrain from reactions. **Equilibrium/Balance** of nervous processes is the ratio of the strength of excitation to the strength of inhibition. **Mobility** of the nervous system consists in responding quickly and adequately to continuous changes in the surroundings, and enables one to inhibit some excitations and evoke some reactions, as required by the demands of the environment (Strelau, 1987; Strelau et al., 1990a; Strelau et al., 1990b).

3.2 Eysenck's dimensions of Extraversion-Introversion and Neuroticism-Stability

Initially, Eysenck analyzed personality in terms of two dimensions: E and N. The original Eysenck "Big Two" (Digman, 1990, p. 422) are regarded as traits, where both Extraversion-Introversion (E) and Neuroticism-Stability (N) constitute continuums with two end-points rather than binary oppositions (Eysenck & Eysenck, 1964). An **extravert** is described as outgoing, impulsive, uninhibited, sociable, often participating in group activities and needing people to talk to,

while an **introvert** is said to be quiet, introspective, reserved, distant, preferring books to people. People scoring high on the **Neuroticism** (N) dimension are said to be emotionally over-responsive, over-reactive, unstable, prone to neurotic disorders caused by stress, and characterized by emotional liability (Eysenck & Eysenck, 1964, pp. 5–13).

There are very important differences between extraverts and introverts (Dewaele & Furnham, 1999; Eysenck & Eysenck, 1964; Heylighen & Dewaele, 2002; Scherer & Scherer, 1981), beginning with different levels of arousal in the autonomic nervous system and the cortex. People operate with a moderate level of arousal, and the same stimulus (external, provided by the surrounding environment, or internal, provided by the person reacting to it) might be negligible for an extravert, but evoke a very strong reaction from an introvert (hence introverts' lower tolerance for strong light or loud noise). To keep an optimal arousal level, extraverts tend to seek stimulation and introverts prefer to avoid becoming over-aroused. Verbal interaction, with its concomitant stimulation, has the potential for providing the desired degree of arousal or exceeding the individual's tolerance level, for which reason extraverts may seek to engage in conversation while introverts may withdraw from it.

Research results on the relationship between extraversion and the rate and degree of success in FL acquisition have been marked by inconsistency (Bielska, 2006; Kezwer, 1987; Souzandehfar et al., 2014; Strong, 1983; Zafar & Meenakshi, 2012). However, extraversion has been repeatedly found to influence measures of *oral communicative interaction*, and "the more complex the task, the stronger the relationship" (Ellis, 2004, p. 541). Increasing the complexity of a task and the amount of stress it causes makes the difference between extraverts and introverts more noticeable. Dewaele and Furnham (2000) found that stress caused by the formality of a situation had the strongest effect on introverts' speech production, observed in mean length of an utterance. The correlation between Extraversion and mean utterance length was $r = -.42$ in informal situations and absent in formal situations. It follows that introverts produced their longest utterances in an informal context. The advantage that extraverts have over introverts in conversation and their greater fluency is attributed to their better short-term memory capacity and processing functions, lower anxiety levels, and superior stress resistance (Dewaele & Furnham, 2000, p. 356).

The following L1-related measures have been found in various studies to be related to extraversion: higher verbal output, higher speech rates, lower silence quotient, fewer hesitations (Dewaele & Furnham, 1999, p. 533). L2-related measures related to extraversion include higher fluency, higher speech rates (in both formal and informal contexts), fewer filled pauses, shorter utterances (Dewaele & Furnham, 1999, pp. 533–5) and fewer words per sentence, initiating conversation rather than listening (Mairesse et al., 2007, p. 461). Scherer (1979,

p. 178) suggests that “extraversion seems to be the only trait which is consistently found to be associated with a greater amount of verbal output or longer total speaking time.”

Analyzing the relationship between temperament measures and communication traits, McCroskey et al. (2004) included Willingness to Communicate (in L1), defined as “the degree to which one is willing to initiate oral communication with other people” (McCroskey et al., 2004, p. 405) and found that it correlated with Extraversion (.43) and Neuroticism (–.21). In comparison with extraversion, the amount of literature on neuroticism and its relation to speech markers is negligible. Mairesse et al. (2007, p. 469) mention two markers of emotional stability, holding for both self-reports and observer reports: a high word count and a low mean pitch.

3.3 Anxiety

Anxiety is defined as “the subjective feeling of tension, apprehension, nervousness, and worry associated with an arousal of the autonomic nervous system” (Horwitz et al., 1986, p. 125 based on Spielberger, 1983). **Trait** anxiety is a “behavioural disposition, due to which a human being perceives a wide variety of objectively unthreatening situations as threatening, which causes their disproportional overreaction to such situations (Spielberger, 1966)” (Piechurska-Kuciel, 2008, p. 42). **State** anxiety is “a transitory condition of unpleasant, consciously perceived feelings of tension, apprehension, and nervousness that vary in intensity and fluctuate in time as a reaction to circumstances that are perceived as threatening” (Piechurska-Kuciel, 2008, p. 42). Anxiety has been repeatedly blamed for “[d]ifficulty in speaking in dyads or groups (oral communication anxiety) or in public (‘stage fright’)” (Horwitz et al., 1986, p. 127). Anxiety related to communication situations in L1 is exacerbated when it comes to L2 interaction. Due to the potential impact of anxiety on foreign and second language learning and production, the notion of *language anxiety* or *foreign language anxiety* (FLA) has been introduced (Gałajda, 2013; Horwitz et al., 1986), which in contrast to trait or state, is a **situation-specific** anxiety (Horwitz, 2010; MacIntyre, 2007). Anxiety is labeled as **debilitating** if it has an adverse effect on performance, and **facilitating** if it has positive influence. Oxford (1999, p. 61) illustrates both negative correlations of anxiety and speaking tasks, and the facilitating influence of anxiety on oral performance. Anxiety is often associated with poorer oral performance in front of the group and classmates. Participation in oral classroom interaction is highly anxiety-provoking (Matsuda & Gobel, 2004, p. 22; von Wörde, 2003, p. 5) and speaking before a whole group is often associated with extra stress. A major question in research on language anxiety is whether it is the *cause* or the *result* of poor achievement (Ellis, 2004, p. 540).

Relating anxiety to amount of speech, Mihaljević Djigunović (2006) found that in an oral description task, learners with higher anxiety levels produced longer texts in L2 (English) than in L1 (Croatian) and smaller amounts of continuous speech in both L1 and L2, and their mean length of filled pauses was higher in L2 than L1.

4. Method

The present study explores the relationship between quantitative verbal dominance levels and individual differences, and in order to do this, results of classroom observations were used for determining verbal dominance levels, and personality inventory scores accounted for individual differences. What follows is part of a rather long-delayed report of a study conducted to examine factors determining classroom dominance structures, which explains why some of the research instruments and the concepts underlying the methodology have evolved considerably since the study was initiated.

4.1 Participants

The subjects were 46 third year students of the English Department, University of Silesia, Poland. They were predominantly female, about 22 years of age, all native speakers of Polish, who on entering the English Department had had at least four years of English as part of their secondary school education. At the English Department they formed four groups (A, B, C, and D) and in these groups had attended five types of practical English classes (B1 level), namely grammar, intensive listening, reading comprehension, conversation, and composition, as well as several kinds of lectures and classes conducted in English, devoted to subjects such as linguistics, literature, and FLT methodology.

4.2 Instruments

Three verbal dominance measures were determined for each participant through observation: Talkativeness, Initiation Frequency, and Mean Chunk Length. Individual differences, on the other hand, were assessed by means of inventories or questionnaires.

4.2.1 Verbal Dominance Observation Scheme

The following is a description of the Verbal Dominance Observation Scheme (VDOS), which was developed by the author for the purpose of the study. Because of its simplicity, it might prove useful to action researchers wishing to begin with a simple instrument for examining verbal dominance hierarchies in groups. It might at first appear rather crude compared with more sophisticated but less accessible procedures (e.g., Basu et al., 2001; Hung et al., 2007). However, it is applicable for natural conversation groups and is relatively unobtrusive. It does not require special conditions, like extra equipment or software, or that a small pre-specified number of participants be taken to a laboratory-like environment. The basic verbal dominance features captured by VDOS involve the amount of talk expressed in time length and the number of times people initiate utterances. The observation scheme is suitable for a whole-group discussion (initially leaderless or with a facilitator, here called *chair*) conducted on a one-speaker-at-a-time basis, with self-selection of speakers. This allows for a dominance hierarchy to emerge spontaneously, without being disrupted by one person (e.g., the facilitator) nominating speakers, as a teacher might do when trying to get reserved students to talk.

The observation system described here involves two observers engaged in real-time coding and combines features of both sign and category systems (Wragg, 2002, p. 37): Observer One uses a Verbal Dominance Observation Form (VDOF, see below) to account for the dominant speaker talk time at five-second intervals, while Observer Two tallies initiations, accounting for every time a new speaker takes the floor. The scheme uses direct coding, which does not demand the use of video or audio equipment, and the few item types employed (one dominant speaker, several dominant speakers, and no [dominant] speaker) involve observers in making low-inference observations which do not require interpreting behaviors before coding. Consequently, an observer does not need much time to learn how to use the scheme. Furthermore, keeping time during observations is fairly easy to do, whether using a digital watch or a traditional one.

Applying the notation system involves three stages:

- before observation: mapping individual students' seats and noting participants' names,
- during observation: notation of students' verbal interaction,
- after observation: calculating and analyzing the results.

Before observation begins, a clear sketch is made of the students' seating arrangement, in which each participant is marked with a number and his/her name or initials. During observation students are referred to by numbers. Observers, who should remain as unobtrusive as possible, need to see all participants clearly, but they do not take part in the discussion they are coding.

Observer One uses a seating arrangement sketch, a Verbal Dominance Observation Form (VDOF), and a watch (preferably a stopwatch), while Observer Two needs only a seating arrangement sketch. Observer One uses an observation form (VDOF) in the manner described below, while Observer Two accounts for students' initiations by making a notation every time a new speaker begins speaking to the whole group. Noting initiations can be done in one of the following ways:

- drawing a tally mark next to the speaker's number on the seating arrangement sketch,
- drawing a tally mark next to the speaker's name on a list of participants' names,
- writing the number of each speaker as he/she begins to talk.

The first two ways make it very easy to sum up the number of each student's initiations at the end, by simply adding up the number of tally marks, while the last way enables the researcher to study the sequence of speakers.

The Verbal Dominance Observation Form (VDOF) is used to code verbal interaction with reference to 5-second units. Every five seconds Observer One decides which of the three categories described below applies to the time unit that has just passed and marks it on the VDOF. The categories are as follows:

- One dominant speaker—only one person takes the floor to speak for everyone to hear, or several speakers do so, but there is one who talks for the longest period of time. This participant's number from the seating arrangement plan is used to indicate the dominant speaker; if the chair is the dominant speaker, this fact is marked with an "x."
- Several dominant speakers (marked "●")—several participants say something for the whole group to hear during a given 5-second period, making it impossible to select a single dominant speaker. This normally happens in two situations: (1) when discussion participants are trying to outtalk one another and some of them speak simultaneously, thus breaking the rule that only one person speaks at a time; and (2) when the one-person-at-a-time rule is not broken, as the participants speak in turn, but since they say something short in quick succession, the amount of their contribution is so similar that again no single person can be regarded as the dominant speaker.
- No (dominant) speaker (marked "○")—none of the participants takes the floor to address the group. This category includes complete silence, and also situations when individual students communicate "privately" with one another in whispers, as if inhibited from or uninterested in addressing the whole group.

Figures 3 and 4 are samples of the first six minutes of two sessions with different student groups, coded by Observer One. One horizontal line on the form consists of 12 boxes and corresponds to one minute ($12 \times 5 \text{ secs} = 60 \text{ secs}$). The number preceding each line shows how many minutes have passed since the session began.

0	x	x	x	x	x	x	x	5	5	5	5	2
1	2	x	x	x	x	x	x	5	5	5	•	•
2	x	•	x	x	x	7	x	6	•	•	x	8
3	8	8	•	6	8	x	x	7	7	7	7	7
4	7	6	6	6	8	8	8	8	8	8	8	8
5	7	7	7	7	7	7	8	7	7	x	x	x

Figure 3. Verbal Dominance Observation Form (VDOF)
sample: class one

0	x	x	x	x	x	x	x	x	x	x	x	x
1	x	x	x	○	○	4	4	4	4	4	4	x
2	x	x	x	x	4	4	x	x	x	x	x	5
3	5	6	x	2	○	x	x	x	3	x	3	3
4	3	3	3	3	3	3	3	3	3	3	4	3
5	3	3	3	3	3	3	3	5	○	4	4	4

Figure 4. Verbal Dominance Observation Form (VDOF)
sample: class two

The results obtained from a VDOF can be used to compare different classes as well as different students in the same class (Tables 1 and 2).

Table 1. Calculating the results from VDOF sample: class one (cf. Figure 3)

Category	Speaker	Number of units (1 minute = 12 units)
one dominant speaker:	x (chair)	24 (7 + 6 + 3 + 3 + 2 + 1 + 1 + 1)
	7	15 (6 + 6 + 2 + 1)
	8	13 (8 + 3 + 1 + 1)
	5	7 (4 + 3)
	6	5 (3 + 1 + 1)
	2	2 (2)
	4	–
	3	–
	1	–
several dominant speakers:	•	6 (2 + 2 + 1 + 1)
no dominant speaker:	○	– –

Table 2. Calculating the results from VDOF sample: class two (cf. Figure 4)

Category	Speaker	Number of units (1 minute = 12 units)
one dominant speaker:	x (chair)	30 (15 + 5 + 5 + 3 + 1 + 1)
	3	21 (12 + 8 + 1)
	4	12 (6 + 3 + 2 + 1)
	5	3 (2 + 1)
	2	1 (1)
	6	1 (1)
	1	–
several dominant speakers:	●	–
no dominant speaker:	○	4 (2 + 1 + 1)

How do the two classes referred to in Figures 3–4 and Tables 1–2 compare? As can be seen from Table 2, there are 9 students (including the chair) in class one and 7 students in class two. Despite the size difference, both classes have the same number of dominant speakers, six, including the chair. In neither group is talking time distributed equally among group members, and most verbal interaction in both groups is dominated by three speakers, including the chair. However, the differences between dominant speakers are more striking in class two. The three most dominant speakers talked for 24, 15, and 13 units in class one and for 30, 21, and 12 units in class two. Class one shows signs of students striving for dominance: six *several dominant speakers* units, and not a single *no speaker* unit. Class two, on the other hand, exhibits signs of withdrawal from verbal interaction, or dominance aversion: four *no speaker* units, and no *several dominant speakers* units. The chair’s total contribution is greater in class two (class one: 24 units, class two: 30 units). It might also be interesting to compare the chair’s role at the beginning of both sessions. As Figures 3–4 show, in class one a student took over the role of dominant speaker as early as about 35 seconds (7 units) after the chair had begun a discussion, while in class two it took well over a minute for this to happen (15 units of the chair’s contribution followed by 2 units of silence). Furthermore, before the first three minutes of the discussion were out, in class one as many as five different students had become dominant speakers, while in class two only two students had done so by this juncture. Consequently, the two samples indicate that in class one the students tried to outtalk one another, while in class two there was more hesitancy on their part and apparently more reliance on the input provided by the chairperson.

Data collected by Observer One characterize participants with reference to their **floor-holding time**, obtained from the number of 5-second units during which a particular person was the dominant speaker (the number of times his/her number was entered in the VDNF multiplied by five). Data provided by Observer Two (not included in this discussion) record each participant’s number

of initiations and are complementary to total floor-holding time, as they might help distinguish between those students who take no part in a discussion at all and those whose contributions are too short for the participants to be regarded as dominant speakers in the VDNF. Comparing the number of initiations in different classes might reveal differences in the discussion dynamics—very many initiations would indicate a heated verbal exchange where participants respond quickly and possibly interrupt more. However, we cannot use the sheer number of initiations or sheer floor-holding time to compare a 33-minute session with a 21-minute class, for example. What we need is a measure that will characterize classes or individuals and their contribution independently of session length. To this end, we shall use two basic indicators of an individual participant's verbal dominance level: Talkativeness and Initiation Frequency.

Talkativeness is indicative of one's amount of talk, and is assessed by dividing one's total amount of floor-holding time by his/her presence time. **Presence time** refers to the amount of time during which a person was present as a potential discussion participant. In multiple-session observations, a participant's presence times may differ from the overall length of sessions as it does not include the time when the person missed some sessions ("absence time"). For the sake of convenience and clarity, Talkativeness is expressed in the number of seconds per hour. **Initiation Frequency** is estimated by dividing one's total number of initiations by presence time. It may be expressed in the number of initiations per hour or per minute. Tentatively, a third potential indicator of verbal dominance has been considered, involving the notion of a **chunk**, understood as a period of time consisting of n ($n \geq 1$) consecutive 5-second periods during which the same person was a dominant speaker. **Mean Chunk Length** is determined by dividing one's total floor-holding time by his/her total number of chunks. In short, the following three measures characterizing each student were used in the study as indicators of verbal dominance.

$$\begin{aligned} \text{talkativeness} &= \frac{\text{floor-holding time}}{\text{presence time}} && [\text{sec/h}] \\ \text{initiation frequency} &= \frac{\text{no of initiations}}{\text{presence time}} && [\text{init/h}] \text{ or } [\text{init/min}] \\ \text{mean chunk length} &= \frac{\text{floor-holding time}}{\text{number of chunks}} && [\text{sec}] \end{aligned}$$

It is important to remember that the chair's status role is markedly different from that of other participants, and therefore his/her dominance measures can also be different. The chair and other discussion participants differ in respect of **interactional obligation**. Regular participants may choose to withdraw from verbal interchange without consequence, but this puts pressure on the chair

to interact by providing stimuli which would elicit verbal reactions from the group members. Consequently, when analyzing and comparing conversation participant's dominance measures, it is important to distinguish between results corresponding to *chair* and *non-chair* status. The results presented below are based exclusively on figures related to participants with the *non-chair* status.

4.2.2 Inventories assessing individual difference variables

Individual difference variables under study include several trait-like personality variables and one state-like variable (state-anxiety). They were assessed by means of three questionnaires, which were Polish versions of the *Strelau Temperament Inventory* (STI), Eysenck's *Maudsley Personality Inventory* (MPI), and Spielberger's *State-Trait Anxiety Inventory* (STAI).

The Polish version of the *Strelau Temperament Inventory* (STI), called *Kwestionariusz do badania temperamentu*, consists of 134 questions, related to three basic CNS properties: strength of excitation, strength of inhibition, and mobility. A fourth scale, balance of nervous processes, is calculated as the ratio of strength of excitation to strength of inhibition (Strelau et al., 1990a; 1990b).

The Polish adaptation of the *Maudsley Personality Inventory* (called *Inwentarz osobowości*) by Choynowski, consists of 64 questions corresponding to three scales: Neuroticism and Extraversion, each containing 24 questions, and a 16-item Lie scale (Choynowski, 1968; 1972; 1977; Eysenck, 1968). Only the scores from the first two scales have been used in the correlation analysis.

Spielberger's *State-Trait Anxiety Inventory* (STAI) consists of two scales, each consisting of 20 statements with four-point Likert items, measuring two kinds of anxiety: trait-anxiety and state-anxiety. The statements refer to how one feels in general and how one feels at a particular moment. The Polish version of STAI is called *Inwentarz Stanu i Cechy Lęku* (ISCL) (Sosnowski & Wrześniewski, 1983; 1986).

To sum up, individual difference variables in the present study consist of strength of excitation, strength of inhibition, mobility, and balance; Neuroticism and Extraversion; and trait-anxiety and state-anxiety.

4.3 Procedure

The present study set out to determine levels of verbal dominance of university students in their natural FL classroom environment, specifically their regular conversation classes. Apart from several practical English subjects, once a week the students attended a 90-minute long conversation class, aimed at develop-

ing speaking skills. Verbal interaction involved the whole class or group work, covered different communicative functions and a wide range of everyday topics, and was prompted by different stimuli, for example, magazine articles, discussion topics, role play cards, language games. One specific activity was used for research purposes and followed the following pattern. Each week one of the students (referred to here as *chair*) was responsible for introducing a topic of interest to the whole class and running an open discussion. The chair was expected to sustain conversation but was expressly instructed not to nominate consecutive speakers. Floor-holding was based on speaker self-selection, so it was up to an individual participant whether to take part in a discussion or not. The speaking session length was not predetermined, and the chair would terminate the activity the moment the class seemed to have run out of things to say. Classroom observations were carried out throughout a whole semester.

4.4 Results

The 46 participants attended classes as four different groups, consisting of 9, 16, 11, and 10 students. The final results are based on the observation of 36 sessions, the number of sessions in one group ranging from 8 to 11. A single session length ranged from 14 to 70 minutes, while the mean session length was 31.5 min. Results of 42 participants (39 females and 3 males) were used for the correlation analysis. Given that the sample comprised almost exclusively female subjects, gender differences were not taken into account.

Correlations between measures of verbal dominance and individual differences are presented in Table 3. The correlations between nervous system properties—as represented in the *Strelau Temperament Inventory*—and verbal dominance measures are as follows. There is very visible correlation between strength of excitation on the one hand and Talkativeness ($r = .510$, $p < .001$) and Initiation Frequency ($r = .519$, $p < .001$) on the other, and moderate correlation between balance of nervous processes and Talkativeness ($r = .475$, $p < .01$) and Initiation Frequency ($r = .439$, $p < .01$). Strength of inhibition and mobility do not correlate significantly with any measure of dominance, and no CNS property correlates with Mean Chunk Length.

Eysenck's measure of Extraversion correlates with all the three aspects of verbal dominance at the level of $r = .37$, $p < .05$. There is negative correlation between Neuroticism and Initiation Frequency ($r = -.420$, $p < .01$). The correlations between neuroticism and Talkativeness ($r = -.296$, $p < .10$) and Mean Chunk Length are insignificant.

Trait-anxiety correlates negatively with Talkativeness ($r = -.395$, $p < .01$) and Initiation Frequency ($r = -.394$, $p < .01$). State-anxiety correlates with Initiation Frequency ($r = -.350$, $p < .01$).

All in all, two of the three verbal dominance measures, Initiation Frequency and Talkativeness, bear evident relationship with individual difference variables. Initiation Frequency correlates with six variables: strength of excitation, balance, and extraversion, as well as—negatively—with neuroticism, trait-anxiety and state-anxiety. Talkativeness correlates with four variables: strength of excitation, balance, extraversion, and—negatively—with trait anxiety. Mean Chunk Length correlates only with extraversion. None of the dominance measures correlate significantly with strength of inhibition and mobility.

Of all the personality variables examined, strength of excitation followed by balance bear the strongest influence on Talkativeness and Initiation Frequency.

Table 3. Correlations of measures of verbal dominance with individual differences

Individual differences	Verbal dominance		
	Talkativeness	Initiation Frequency	Mean Chunk Length
Strength of excitation	.510***	.519***	.058
Strength of inhibition	.164	.159	.049
Mobility of nervous processes	.221	.167	.090
Balance of nervous processes	.475**	.439**	.086
Extraversion	.365*	.368*	.365*
Neuroticism	-.296†	-.420**	-.134
Trait-anxiety	-.395**	-.394**	-.105
State-anxiety	-.273†	-.350**	.094

*** $p < .001$, ** $p < .01$, * $p < .05$, † $p < .10$ (two-tail); $N = 42$

4.5 Discussion

The study results indicate that there is a relationship between quantitative behavioral dominance and measures related to the central nervous system properties, extraversion, neuroticism, and anxiety. The results reveal an interplay between individual difference variables and two of the three dominance measures used in the correlation analysis: Talkativeness and Initiation Frequency. Curiously enough, only Extraversion correlated with the third dominance measure, Mean Chunk Length. Overall, Initiation Frequency stood out most clearly as an indicator of verbal dominance.

Of all the personality variables studied, verbal dominance (specifically, Talkativeness and Initiation Frequency) was affected most by strength of excitation (the most important property of the central nervous system) and balance of nervous processes. Higher levels of Talkativeness and Initiation Frequency pointed in the direction of a strong and balanced type of nervous system (see

Figure 1). Mobility and strength of inhibition did not correlate significantly enough to be regarded as having an effect on verbal dominance levels.

It is not surprising that verbal dominance measures correlated with Extraversion. The interesting thing is that Eysenck's Extraversion dimension, as the only personality variable under study, correlated with all three measures of dominance (including Mean Chunk Length), and did so at the same level ($r = .37$, $p < .05$). The Extraversion dimension quite uniquely captured a speaker's ability (expressed by Mean Chunk Length) to hold the floor as the dominant speaker for a period of time and resist yielding the floor to potential interrupters.

Perceived through verbal dominance measures, Neuroticism was likely to have a negative relationship with Initiation Frequency, not so much with Talkativeness. In other words, people more stable emotionally were likely to initiate speech more often, but not necessarily were they much more talkative than those who were less stable. In the context of Eysenck's both dimensions, people more dominant verbally exhibited signs of being more extraverted and more stable (see Figure 2).

Negative correlations of anxiety with Talkativeness and Initiation Frequency indicate that the anxiety dealt with was of the *debilitating* rather than *facilitating* kind. Observed verbal dominance is affected by the rather stable trait-anxiety level one brings into the classroom, which is in line with Nerlicki's (2011) empirical finding that foreign language anxiety is strongly dependent on factors, including personality, present *before* oral production.

Of all the individual difference variables under study, state-anxiety is the only un-trait-like variable, and it represents the level of anxiety at the time of its assessment. Verbal dominance measures, on the other hand, are based on a whole semester's observations. Consequently, the results suggest that those who, throughout the semester, initiated more—but not necessarily talked much more—tended to experience lower anxiety at the time when it was assessed.

4.6 Concluding remarks

The present study provides an insight into the functioning of FL conversation classes and shows how biologically-determined, or trait-like (Strelau 2001; Strelau & Angleitner, 1991) individual differences can influence emerging verbal dominance hierarchies and the resulting differences in classroom participation. Realizing the nature of those differences is essential in all those cases where voluntary participation constitutes an important criterion of student assessment.

The most obvious way to optimize the amount of students' verbal output is to split up the whole class into groups. This increases the potential equal share of the floor available to everyone, and at the same time reduces the audience size—thus,

lowering anxiety—and the formality of interaction, which in part is related to changes in proxemic relations. Enhancing low participators' verbal contribution in whole-class interaction is easily achieved by speaker nomination; however, being called upon by the teacher may add to some students' feelings of stress connected with having to perform in front their peers. This can be partly dealt with by the teacher thoughtfully manipulating topic familiarity and making a task less cognitively demanding—reporting to the whole class on what was just discussed in small group interaction is much easier than offering an impromptu solution to an unfamiliar problem, for example. Optimizing students' participation may involve not only enhancing their speaking opportunity, but it might also require consideration in finding ways to deal with excessive floor grabbers. One possible option here might be to engage them in tasks diverting them from prolonged floor-holding, for example, by making them classroom activity coordinators.

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M. Krzysztof Szymczak

Dominacja werbalna a cechy temperamentu oraz poziom lęku studentów anglistyki

Streszczenie

Głównym tematem artykułu są przeprowadzone badania nad relacją pomiędzy poziomem ilościowej dominacji werbalnej wśród studentów anglistyki a ich cechami indywidualnymi (osobowościowymi). Wskaźniki poziomu dominacji poszczególnych studentów obejmują rozmowność, częstotliwość inicjowania oraz średnią długość segmentu czasowego dominacji (*Mean*

Chunk Length), określone na podstawie obserwacji zajęć z konwersacji w języku angielskim, w szczególności dyskusji, w których udział bierze grupa jako całość, lecz uczestnicy spontanicznie zabierają głos, bez wskazywania kolejnego rozmówcy. Różnice indywidualne, określone przy pomocy kwestionariuszy osobowości, obejmują cechy temperamentu (właściwości centralnego systemu nerwowego, ekstrawersję i neurotyzm) oraz poziom lęku (jako cechy i jako stanu). Przedstawiono wykorzystany w badaniu schemat obserwacji służący określaniu dominacji wśród uczestników oraz wyniki analizy korelacyjnej zmiennych. Wyniki wskazują na istnienie związku pomiędzy obserwowaną strukturą dominacji werbalnej a badanymi różnicami indywidualnymi.

Krzysztof Szymczak

Verbale Dominanz vs. Temperamenteigenschaften und das Angstniveau von den Anglistikstudenten

Zusammenfassung

Das Hauptthema des Beitrags sind Untersuchungen, die die Relation zwischen dem Niveau der verbalen Dominanz unter den Anglistikstudenten und deren individuellen (persönlichen) Eigenschaften erforschen sollten. Die Anzeichen des Niveaus von der Dominanz der einzelnen Studenten umfassen: *Gesprächigkeit*, *die Frequenz des Initiierens* und mittlere Länge des temporalen Segmentes der Dominanz (*Mean Chunk Length*), die anhand der Betrachtung des Konversationsunterrichts auf Englisch und insbesondere anhand der Diskussionen definiert wurden, an denen die Gruppe als eine Einheit teilnimmt, aber die einzelnen Diskussionsteilnehmer ganz spontan das Wort ergreifen. Die mittels Persönlichkeitsfragebogen definierten individuellen Unterschiede umfassen die Temperamenteigenschaften (Eigenschaften des Zentralnervensystems, Extraversion und Neurotizismus) und das Angstniveau (als eine Eigenschaft und ein Zustand zugleich). Der Verfasser schildert das bei der Untersuchung verwendete und der Beurteilung von der Dominanz unter den Teilnehmern dienende Beobachtungsschema und die Ergebnisse der korrelativen Variablenanalyse. Die Ergebnisse weisen darauf hin, dass es ein Zusammenhang zwischen der zu beobachteten Struktur der verbalen Dominanz und den untersuchten individuellen Unterschieden besteht.